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Analysis of Height Growth Response and Flavonoid Content of Green Meniran Plant (*Phyllanthus niruri* L.) in Response to Cow Manure Application

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This research was aimed at determining the response of plant height growth and flavonoid compound levels of green Meniran plants (*Phyllanthus niruri* L.) grown in a mixture of soil and cow manure. This study was conducted at the Biology Laboratory, Botany Unit, Faculty of Mathematics and Natural Sciences, Halu Oleo University. This research was conducted from September to December 2023. The type of experimental research using the Completely Randomized Design (CRD) method with 2 treatments (T) and 5 replications, namely planting Meniran plants in soil media without cow manure (T0) and a mixture of soil and cow manure (T1) with a ratio of 1: 1. The parameters observed were plant height and flavonoid compound levels from green Meniran plants. Plant height (cm) is measured from the base of the stem to the growing point of the plant every 7 days. Measurements begin when the plants are 0, 7, 14 and 21 days after planting (DAP). Plant height (cm) of green Meniran plants were analyzed using Analysis of Variance ANOVA ($\alpha = 0.05$) and further tested the Honestly Significant Difference (HSD) Test if there was a significant difference. Flavonoid levels of green Meniran plants were obtained based on the quercetin standard curve. The results of the studies showed that the highest growth response of Meniran plants was in green Meniran plants grown in a mixture of soil and cow manure 1:1 (T1) with a height of $19{,}52^{b}$ cm. The flavonoid compound content in T1 was 280 mg QE/g and the flavonoid compound content in T0 was 190 mg QE/g. The provision of cow manure can increase plant height growth and flavonoid content of green Meniran plants.
Keywords: Biodiversity, medicinal plants, traditional medicine, herbal remedy, plant nutrition, organic manure, flavonoids.

INTRODUCTION

Indonesia is one of the world's most biodiverse countries. Approximately 30,000 plant species are known to live in Indonesia's tropical forests. Although up to 9,600 plant species are known to possess medicinal properties, only around two hundred of them have been used as raw materials in traditional medicine. (Wahyuningrum et al., 2022). Some Indonesians believe that traditional medicine can cure various ailments. Traditional medicine is a combination of substances from flowers consumed and considered traditional remedies by the community. Because it uses herbal ingredients, traditional medicine is often referred to as herbal medicine. Meniran (*Phyllanthus niruri* L.) is one type of plant used in traditional medicine. (Adiyasa & Meiyanti, 2021).

The Meniran plant is an Indonesian medicinal plant that has been used for generations for medicinal purposes (Hidanah et al., 2018). The Meniran plant (*Phyllanthus niruri* L), found in tropical and subtropical regions, grows wild in rocky, humid environments, as well as in gardens, forests, and backyards. The leaves, stems, fruit, and roots of the Meniran plant (*Phyllanthus niruri* L) can all be used as herbal remedies. Meniran plant (*Phyllanthus niruri* L) has several uses, including boosting immunity, promoting urination, reducing fever, treating stomach ailments, regulating menstruation, improving vision, eliminating acne, healing burns, increasing appetite, treating malaria, alleviating toothache, and treating coughs. (Tambunan et al., 2019).

Meniran plant (*Phyllanthus niruri* L) contains steroids, saponins, terpenoids, alkaloids, and flavonoids. Flavonoids are compounds that contain powerful antioxidants to fight

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free radicals. Flavonoids and quercetin are known as cancer inhibitors (anticarcinogens). Flavonoids and quercetin are also known as phytochemical compounds containing antioxidants that have many health benefits such as fighting free radicals, reducing allergies, reducing the risk of cancer, and supporting heart health. The Meniran plant also contains nirurin and quercetin, which are bioactive compounds that contribute to its pharmacological effects such as antioxidant, anti-inflammatory, and immunomodulatory, helping to overcome inflammation, allergies, and supporting immune function, as well as potential in herbal medicine for various diseases (Hidayat & Wulandari, 2022). In the world of health, flavonoids have advantages as antibacterial and antioxidant materials (Doloking et al., 2022). Flavonoids are antibacterials, which work by damaging bacterial cell membranes and inhibiting bacterial cell division, thereby stopping the growth or killing bacteria (Syafitri et al., 2023). Flavonoid compounds are recognized to have positive physiological outcomes. consequently, plant life containing flavonoids are widely utilized in traditional medicinal drug (Welly et al., 2024).

The composition of secondary metabolite compounds in plants is influenced by the use of external and internal additives, including genetic traits, developmental stages, and plant enhancement (Astuti & Respatie, 2022). Flavonoids are important secondary plant metabolites, produced by the combination of basic compounds (such as phenylpropanoid and acetic acids). Secondary metabolites in plants are characterized as chemicals with bioactive properties and serve as a defense against infection and stressful environmental influences (Julianto, 2019).

Manure is a type of fertilizer that comes from animal waste such as goat, chicken and dairy cow manure. Anandyawati et al. (2023) reported that dairy animal fertilizer may be a fertilizer inside the cold fertilizer category which means that the changes in microorganisms manifest steadily in order that no warm is shaped. A grown-up bovine in Indonesia produces 7500 kg of new excrement or 2/3 x 7500 kg = 5000 kg of fertilizer each year (Nopriani et al., 2022). Bovine excrement encompasses a supplement substance of N 2.33%, P2O5 0.61%, K2O 1.58%, Ca 1.04%, Mg 0.033%, Mn 179 ppm, and Zn 20.5 ppm (Wiryanta & Bernardinus, 2002).

Cow manure has general properties and is no longer harmful to the soil, providing large-scale components (nitrogen, phosphorus, potassium, calcium, and sulfur) and small-scale components (iron, zinc, boron, cobalt, and molybdenum). Cow manure has the potential to increase water retention, soil microbiological activity, cation exchange capacity, and improve soil form. The impact of cow manure implicitly makes the soil more easily retain water. The use of cow manure can increase the permeability and organic content of the soil and can reduce the level of soil erosion, ultimately increasing soil resistance to erosion (Yuliana et al., 2017).

Fertilizers can provide a positive response to plant development by stimulating root growth and expanding the ability of soil roots to absorb vitamins optimally from the surrounding environment. Syamsiyah et al. (2024), that besides being a source of nutrition, fertilizer can stimulate root growth, help growth, increase soil porosity and water availability, and play a role in plant growth.

The benefits of natural fertilizers for vegetation are not simplest a issuer of vitamins, however also can help enhance the situation of the soil shape to end up looser and might increase the hobby of microorganisms inside the soil (Maryanto & Rahmi, 2015). Manure is a fertilizer derived from animal waste, such as cow dung. Dairy cow manure contains 0.88% nitrogen, 0.22% phosphorus, and 0.56% potassium. Nutrient content is influenced by various factors, including the type of animal, the type of feed given, and its age (Mariyati & Indasah, 2021).

Providing manure is one way to increase flavonoid compounds in plants. Raden *et al* (2016), this is due to the presence of secondary metabolite compounds such as flavonoids and tannins which are a group of phenol compounds which contain the elements O and H. So that the provision of manure will increase the elements O and H in plants which are very beneficial for plant growth and development.

Manure can have an effect on the flavonoid content in plants (Wang, 2018). The flavonoid content in plants from the provision of manure will be sent to all parts of the plant, including the leaves, fruit and stems (Widyaningrum et al., 2022). Flavonoid biosynthesis in plants may be inspired with the aid of numerous nutrients, which include mild attention, temperature, and soil nutrients (Deng et al., 2019).

Zhao et al. (2021) that nitrogen can affect plant secondary metabolites, consisting of flavonoids.

The utilization of Meniran (*Phyllanthus niruri* L.) still depends on nature and the cultivation of Meniran (*Phyllanthus niruri* L.) is still limited. Continuous harvesting of Meniran plants in nature can have an impact on the scarcity of plants so that Meniran plant cultivation is very important to do. Based on this explanation, researchers are interested in conducting a study entitled analysis of plant growth and Flavonoid levels in green Meniran (*Phyllanthus niruri* L.) with Cow Manure Fertilizer..

The problem in this study is how the growth of plant height and how much flavonoid compound content in Meniran plants (*Phyllanthus niruri* L.) in response to cow manure application ?. The hypothesis in this study is that there is a significant positive effect in the application of cow manure on plant growth and flavonoid levels in Meniran plants (*Phyllanthus niruri* L).. The application of cow manure will increase plant height and flavonoid content in Meniran plants (*Phyllanthus niruri* L.).

MATERIALS AND METHODS

***Research design*:** This research was conducted at the Biology Laboratory, Botany Unit, Faculty of Mathematics and Natural Sciences, Halu Oleo University. This research was conducted from September to December 2023. The type of experimental research using the Completely Randomized Design (CRD) method with 2 treatments and 5 replications, namely planting Meniran plants in soil media without cow manure (T0) and a mixture of soil and cow manure (T1) with a ratio of 1:1. The information of the research design are mentioned in Table 1.

Table 1. Design of Meniran Plant (*Phyllanthus niruri* L.).

Treatment (T)	Meniran (A)				
	A1	**A2**	**A3**	**A4**	**A5**
T0	T0 A1	T0 A2	T0 A3	T0 A4	T0 A5
T1	T1 A1	T1 A2	T1 A3	T1 A4	T1 A5

Information: A = Meniran (*Phyllanthus niruri* L.); T = Treatment; T0 = Land (Control); T1 = Soil: Cow manure (1: 1) (Husnihuda et al., 2017).

***Research materials and tools*:** This research uses several materials and tools in carrying out this research. The materials used in this research are listed in Table 2.

Table 2. Research material and utility.

Materials Name	Utility
Meniran seeds (*Phyllanthus niruri* L.)	As a test plant
Manure (Cow)	As a Treatment Material
Polybag 25x25 cm^2	As a container for planting media
Label paper	To mark samples
Soil	As a Planting Medium
Air	To Water the Plants
Whatman Paper	To separate the filtrate from the residue
Tissue	To Clean the Research Equipment
Ethanol 96%	As a sample solvent
Quercetin	As a standard flavonoid test solution
$AICI_3$ 10%	As a flavonoid test solution

This studied also used tools to support research activities in addition to the materials above. The tools used in this study are listed in Table 3.

Table 3. Research tool and utility.

Tool Name	Unit	Utility
Hoe	units	To take soil samples
Bucket	units	Container for water storage
Dipper	units	To water plants
Analytical Scales	grams	To weigh samples
Rotary Evaporator	-	To evaporate Meniran leaf extract
Blender	units	To refine the sample
Erlenmeyer	mL	To store the solution
Stirring Rod	units	To homogenize the solution
Oven	ºC	To dry samples
Funnel	units	To store filter cloth when filtering extracts
Stationery	-	To record the results of observations
Camera	-	For documentation of research results

***Research variable*:** The research variables are divided into two, namely independent variables and dependent variables. The independent variable in this study is cow manure. The dependent variables in this study are plant height and flavonoid levels found in green Meniran plants (*Phyllanthus niruri* L.).

Data analysis

Analysis of height growth for green Meniran plants (Phyllanthus niruri* L.)*: Data analysis was conducted experimentally. Analysis of the height growth for green Meniran plants was calculated using statistical analysis ANOVA (Analysis of Variance) with a significance level (α) of 0.05, a confidence level of 95% using the SPSS statistical application. If there is a very significant difference in the calculation, it is continued with the Honestly Significant Difference (HSD) Test.

Analysis of flavonoid contents for green Meniran plants (Phyllanthus niruri* L.)*: Analysis or determination of the flavonoid levels for green Meniran plants in this research went through several stages. The stages of analysis or determination of the flavonoid levels for green Meniran plants in this research are as follows:

***Preparation of quercetin standard solution*:** A 2 hundred ppm quercetin wellknown answer became organized and diluted the use of 96% ethanol to reap concentrations of 20, forty, 60, 80, and one hundred ppm. For every concentration, zero. Five mL of the quercetin answer was mixed with 1. Five mL of 96 % ethanol, 0.1 mL of AlCl3, 0.1 mL of one M sodium acetate, and a pair of. Eight mL of distilled water. The combination become very well shaken until it became homogeneous after which incubated at room temperature for 30 minutes. After incubation, the absorbance of every answer turned into measured the usage of a UV-Vis spectrophotometer at a wavelength of 435 nm. The experiment changed into repeated 3 instances to make sure accuracy, and the average absorbance values have been recorded (Aminah et al., 2017).

***Measurement of flavonoid levels*:** To investigate the flavonoid content material within the Meniran extract, two hundred mg of the extract became correctly weighed and dissolved in 100 mL of ethanol. From this answer, 1 mL became pipetted right into a check tube. The sample was then blended with 1.5 mL of ninety-six% ethanol, 0.1 mL of 10% AlCl3, 0.1 mL of 1 M sodium acetate, and a pair of.8 mL of distilled water. The aggregate was incubated at room temperature for 1 hour. After incubation, the absorbance of the solution become measured the usage of a UV-Vis spectrophotometer at a wavelength of 435 nm. The evaluation was executed in triplicate, and the common absorbance cost

became calculated. The flavonoid content material was decided the usage of a quercetin standard curve (Haeria et al., 2018). Calculation of Green Meniran flavonoid compound levels using the formula:

Total flavonoid content (%) = (X×V×Fp)/BS ×100%

Information: X = concentration (mg/mL); BS = extract sample weight (gr); V = extract volume (mL); Fp = diluting factor

RESULTS AND DISCUSSION

***Height Growth of Green Meniran Plants (Phyllanthus niruri* L.):** Plant height is the height calculated from the surface of the media to the tip of the highest leaf of the plant. In this study, it was measured 4 times, namely 0 DAP, 7 DAP, 14 DAP, and 21 DAP. Plant height was measured with a ruler of measurement units (cm). Plant height measurements were carried out to determine the effect of cow manure on Meniran plants (*Phyllanthus niruri* L.). The following is the height of Meniran plants presented in Table 4.

Table 4. Height of green Meniran plant (*Phyllanthus niruri* L.).

Treatment	Plant Height (cm)			
	0 DAP	7 DAP	14 DAP	21 DAP
T0	7,18[a]	10,34[a]	12,98[a]	14,36[a]
T1	8,64[a]	13,02[b]	16,16[b]	19,52[b]
HSD 95%	1,82	1,05	0,41	0,67

Source: Processed Primary Data, 2023

Information: Numbers followed by the same letter in the same column indicate no significant difference based on the Honestly Significant Difference (HSD) Test at the 95% confidence level. DAP: Days after planting; T0: Land (Control); T1: Soil: Cow manure (1:1)

Table 4 showed the height of green Meniran plants (*Phyllanthus niruri* L.) with a aggregate of cow manure soil media (T1) and soil media without cow manure (T0) in each commentary confirmed a massive distinction. the very best price in plant height in T1 became 19.52 cm. this is because the N content material contained in cow manure has a big amount.

Nurjanah et al. (2020), that cow manure fertilizer has higher residences than different herbal fertilizers or artificial fertilizers, due to the fact it's far humus containing natural compounds and is a source of macronutrients which can be critical for plant growth and improvement. The N nutrient element in fertilizer can stimulate vegetation within the formation of amino acids into proteins. Setiawan and Rahardjo (2016), that the provision of organic fertilizers substantially extended the height of Meniran herbaceous flowers compared to without fertilization. The increase ranged from 1-64%. The N element for vegetation is wanted within the synthesis of amino acids and proteins used inside the formation of plant body systems.

The usage of manure outcomes in higher plant top increase because fertilizer can growth soil organic matter and the availability of nutrients in order that it affects plant top. sufficient nitrogen content material in plants will facilitate the cellular division process because nitrogen has a prime role in stimulating average increase, especially stem increase, therefore triggering plant peak growth. Yuliana et al. (2017), that manure incorporates nitrogen vitamins which feature to shape assimilates, specifically carbohydrates and proteins and as a building block for chlorophyll wanted in the photosynthesis technique.

The effects of the only-manner ANOVA (analysis of Variance) test analysis confirmed that the provision of cow manure to green Meniran (*Phyllanthus niruri* L.) became very appreciably specific from the increase of inexperienced Meniran (*Phyllanthus niruri* L.). The control treatment became notably unique from the cow manure treatment. this could be visible from the common plant top at the age of seven to 21 DAP. The Fcount value for the height of green Meniran flowers at statement 7 DAP was 34.531, commentary 14 DAP became 316.013 and at observation 21 DAP was 316.971 in order that the value received changed into > F table. consequently, it has a sizable impact on the boom of Meniran plant height. therefore, it can be concluded that the provision of cow manure has an effect at the growth of Meniran plant peak. From this analysis, Honestly Significant Difference (HSD) Test may be finished.

Table 5. Results of the analysis of flavonoid compound content for green Meniran plants.

Treatment	Replication	Absorbance	Sample Concen. (ug/mL)	Sample Volume (mL)	Flavonoid Levels (mg QE/g)	Flavonoid Levels (mg QE/g)	Total Flavonoid Levels (%)
T0	1	0,263	18,0	10	180000	180	18
	2	0,265	20,0	10	200000	200	20
	3	0,265	20,0	10	200000	200	20
T1	1	0,272	27,0	10	270000	270	27
	2	0,274	29,0	10	290000	290	29
	3	0,273	28,0	10	280000	280	28

Source: Processed Primary Data, 2023

Information: T0: Land (Control); T1: Soil: Cow manure (1:1); ax : 0,001; b: 0,245; Sample Weight: 0,01 Gram; Dilution Factor: 10

The effects of the Honestly Significant Difference (HSD) Test study showed that the supply of cow manure in the T1 remedy ought to have a extensively extraordinary effect on the height of the Meniran plant. From those outcomes, it can be visible that the Meniran plant grown in a aggregate of soil and cow manure confirmed a distinction in peak as compared to the control. that is because the N content contained in cow manure has a huge amount. the supply of cow manure can permit the presence of microorganisms around the root environment which can also help maximize enzymatic reactions in the soil environment and the availability of nitrogen through nitrogen fixation inside the air. Juarsah (2016), that soil natural rely is the main source of soil nitrogen and performs a enormous position within the procedure of enhancing the bodily, chemical, and organic homes of the soil. natural depend brought to the soil will undergo several phases of decomposition by way of organisms to come to be humus or soil natural rely. this is consistent with research Yunus and Malik, (2022), that the Sintrong plant (*Crassocephallium crepidiodes* Benth S. (Moore)) planted with the provision of cow manure has a significantly distinct plant top from the peak of the sintrong plant without the availability of cow manure. Nitrogen (N) inside the manure used is to be had to plant life due to the fact the manure used has matured and gone through fermentation.

***Flavonoid Contents of Green Meniran Plants (Phyllanthus niruri* L.):** The flavonoid compound content in green Meniran plants in this study was analyzed in green Meniran plants leaves. The results of the analysis of flavonoid compound content in green Meniran plants leaves can be seen in Table 5.

Table 6. Average flavonoid content of green Meniran plants.

Sample Code	Average Total Flavonoid Levels (mg QE/g)
T0	190
T1	280

Source: Processed Primary Data, 2023
Information: T0 = Land (Control); T1 = Soil: Cow Manure (1:1)

Table 6 showed the average total flavonoid content in green Meniran (*Phyllanthus niruri* L.) leaves in a mixture of soil and cow manure (T1) which was analyzed using the quercetin curve formula of 280 mg QE/g while the total flavonoid compound level without cow manure (T0) of 190 mg QE/g. Based on the differences in flavonoid content values, it shows that the content of flavonoid compounds in the leaves of the Meniran plant in a medium mixed with soil and manure is higher than the content of flavonoid compounds in Meniran leaves in a medium without a mixture of manure. This is because plants that use manure contain macro and micro elements which physiologically will influence growth results and flavonoid content. Le et al. (2018) stated that plants that use manure contain macro and micro elements which physiologically will influence growth results and flavonoid content.

Manure can increase the total flavonoid content because in the secondary metabolite synthesis pathway, there are precursors of primary metabolites in the form of carbohydrates, proteins, and fatty acids, this is largely determined by the nutrients in the soil. Secondary metabolites of flavonoids, alkaloids, and glycosides are formed from different intermediate metabolite pathways, which are influenced by environmental factors such as light and soil texture. The findings of Neugart et al. (2018) further support this statement, as their research explored the impact of biological waste used as compost on non-volatile metabolites in Brassica rapa Sp. Chinensis. Statistical analysis was employed to assess the extent of metabolic variations resulting from changes in soil composition. The effect of organic residues on the metabolite profile was visualized, enabling clear classification of samples based on soil conditions. The study compared sprouts grown exclusively in soil with those cultivated in various soil-compost mixtures. Slight differences in sprout responses were observed, influenced by the amount of biological waste in the soil. These metabolic variations were reflected in the overall composition, particularly in the metabolism of primary and secondary metabolites.

The research also explored alterations in amino acids, energy pathways, hormones, phenylpropanoids, and sugar metabolism. Sprouts cultivated with various compost types exhibited higher levels of amino acids such as isoleucine, leucine, methionine, and proline compared to the control group. The type and concentration of compost used were found to affect the metabolism of amino acids. For example, sprouts grown with coffee or Aronia compost had higher levels of threonine, while sprouts grown with coffee or hop compost had higher levels of 2-oxoglutarate and oxaloacetate. While 4-hydroxyphenylpyruvate was more noticeable in sprouts cultivated with hop compost, pyruvate levels were higher in sprouts treated with coffee compost. Furthermore, all compost-treated samples showed a drop in glyceraldehyde-3-phosphate, a crucial metabolite in sugar metabolism, whereas sprouts fed with coffee compost showed significantly higher quantities of galactose, galactose-1-phosphate, and glucose.

Secondary metabolite compounds that have antioxidant properties mostly come from the large group of phenolic compounds (flavonoid and non-flavonoid compound groups). The formation of secondary metabolite compounds can be stimulated by fertilization (Andry and Winata, 2023). The formation of secondary metabolite compounds can be inspired by using fertilization and environmental adjustments, as an example modifications in day and night time temperatures, rainfall, drought, and the length and depth of daylight (Yang et al., 2018). Maikami et al. (2022), verified that the source and level of fertilization significantly affected

the overall phenolic and flavonoid content material ($p < 0.05$). The take a look at discovered that the usage of organic fertilizers superior the production of general phenolics and flavonoids in Labisia pumila Benth. especially, natural fertilizer treatment led to a 12% boom in general phenolics and a 22% upward push in flavonoid content material compared to inorganic fertilizers. The optimal fertilization rate become observed to be 90 kg N ha-1, wherein the highest degrees of overall phenolics (1.32 mg/g dry weight of gallic acid) and flavonoids (0.81 mg/g dry weight) have been recorded.

Maikami et al. (2022), that growing fertilizer concentrations past 90 kg N ha^{-1} to a 180 and 270 kg N ha^{-1} caused a reduction in total phenolic and flavonoid content material. The findings discovered that the use of organic fertilizer ought to beautify the antimicrobial and anticancer houses of Labisia pumila. moreover, the consequences indicated a enormous tremendous correlation between total phenolics and flavonoids with dissolved sugars (general phenolics: $r^2 = 0.912$; total flavonoids: $r^2 = 0.923$; $p < 0.05$). This shows that decrease degrees of fertilization promote the accumulation of soluble sugars, which in flip will increase the entire phenolics and flavonoids in Labisia pumila Benth.

The increase in total flavonoid content is due to environmental conditions with low light intensity. Flavonoids are secondary metabolite compounds that belong to a large group of phenolic compounds. Phenolic compounds are formed through the phenylpropanoid pathway. The increase in total flavonoid content was related to the activity of the PAL enzyme (Phenylalanine ammonia-lyase). The PAL enzyme has a role as the main precursor in the phenylpropanoid biosynthesis pathway (Ekawati, 2019). Compounds from the phenolic group, classified as secondary metabolites, are derived from phenylalanine through a reaction involving the removal of ammonia molecules from cinnamic acid. This process is facilitated by the enzyme phenylalanine ammonia-lyase (PAL), which is one of the most extensively studied enzymes in plant secondary metabolism. Phenylalanine serves as a critical junction between primary and secondary metabolic pathways, making this reaction a key step in the biosynthesis of various phenolic compounds (Sahidin et al., 2018).

The large number of flavonoid compounds in a plant is caused by various levels of hydroxylation, alkoxylation, or glycosylation of these structures. Flavonoids are one of many types of secondary metabolites. Secondary metabolites are compounds produced or synthesized in certain cells and taxonomic groups at certain levels of growth or stress. Salim et al. (2017), that macro soil nutrients inclusive of Nitrogen (N), Potassium (ok), organic count (BO), and Carbon (C) have a linear dating with the formation of secondary metabolites. The secondary metabolite content detected based on the results of phytochemical tests on acetone and n-hexane extracts of the fruit peel and leaves of the duku plant (L. domesticum Corr var duku) is in the form of terpenoids, steroids, flavonoids, saponins and phenolics. This is in accordance with phytochemical research on 96% ethanol extract and n-hexane of langsat fruit seeds showing that the secondary metabolite content in langsat fruit seeds is terpenoids, alkaloids, flavonoids, tannins, saponins, and phenols.

***Conclusion*:** The results showed that giving cow manure to plants could increase the height of green Meniran plants (*Phyllanthus niruri* L.), the highest value in plant height in T1 was 19.52 cm. The provision of cow manure can increase flavonoid levels. The flavonoid compound levels in T1 were 280 mg QE/g and the flavonoid compound levels in T0 were 190 mg QE/g. Therefore, to increase the growth of plant height and the levels of flavonoid compounds in green Meniran and similar plants, this can be done by providing cow manure.

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